# Consumer Electronics and the Connected Digital Lifestyle

At the 2009 International Consumer Electronics Show in Las Vegas this January, products for the "connected home" were everywhere in sight, as were green technologies. And start getting ready for 3DTV!

By Masha Zager Broadband Properties

he world's largest consumer technology trade show was held in Las Vegas last month, with 2,700 exhibitors showing a mind-boggling 20,000 new products. Although attendance was off about 15 percent from last year, there was no noticeable slowdown on the vendor side, and the Consumer Electronics Association said its members reported getting more business done this year than at any prior show. In fact, they say they are considering restricting the number of attendees at future shows to this year's levels, on the "less is more" theory.

Will the consumer electronics industry help lead the way to economic recovery, as the CEA boasts? It's certainly possible. If consumers decide to forgo vacations this year, they'll have plenty of new options for home-based entertainment and for staying in touch with the friends and family they're not visiting.

At least half of all new gadgets, it seems, are designed to be connected to the Internet. Inside the home, home automation options are multiplying and networking has become more transparent. Consumers don't just want to view content anytime; they want to view it on any and every screen, without having to think about how it gets there, and they want the whole process to be hassle-free. Vendors are doing their best to accommodate those wishes.

The proliferation of connected devices isn't all that's driving bandwidth demand. Newer file formats mean bigger files that require more download (and upload) capacity. We're still absorbing the shock of high-definition television, a notorious bandwidth-eater, and now we have to start thinking about 3D television as well. How soon before we'll start to see holographic TVs on the market?

## INTERNET CONTENT ON THE TV

We have been talking about moving Internet content to the TV for several years now, yet most people are still watching online videos on their computers (and now on their mobile phones). Will Internet-to-TV be another case of the "flying car," a pipe dream that has been about to materialize for more than 50 years since the first prototypes?

Probably not. For one thing, consumers actually want to watch Internet video on TV. A Diffusion Group survey found that 83 percent of consumers "believe the TV to be the preferred platform for viewing over-the-top video services," and Strategy Analytics found that "the ability to access the Internet from the comfort of the living room ... is making its way into the purchasing criteria of today's tech-savvy consumers who plan to purchase a TV within the next two years."

According to the Strategy Analytics survey, viewers particularly want to use the TV to watch movies from sites like



Attendance may have fallen at CES, but you can't tell that from the show floor.

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Hulu, Netflix and CinemaNow, which they see as a chance for "families to spend more social time together." And they don't want to hook up the PC to the TV - they want to bypass the PC altogether.

The holdup is that televisions are expensive, Internet-connected televisions are even more expensive, and most people don't buy a TV until the old one breaks – so it will be a while before we see an Internet-enabled television in every living room, even though the number of flat-panel TVs is pushing two per household on average. ABI Research, a market research firm, expects the number of Internet-connected TVs, game consoles and set-top boxes to exceed 200 million by 2013.

In the meantime, TV manufacturers are busy adding Internet connections to their devices. Sony, which first announced its Bravia Internet-enabled televisions two years ago, was showing new high-definition models this year (broadband connection of at least 2.5 Mbps recommended). Internet "widgets" on the Bravia deliver real-time information (weather, traffic, stock prices, news, Ebay auction results, even movies) to the TV screen, and the integrated Internet Video Link supports streaming video. An Ethernet connection plugs directly into the broadband modem. The Bravia uses a "walled garden" approach where the video content comes from Sony partners including Amazon, YouTube, Yahoo, Slacker and others.

LG Electronics is taking the same approach as Sony, with two new broadband HDTV product lines that offer instant streaming of movies, TV shows and video, along with Internet widgets, via Ethernet connectivity directly to the television. LG's walled garden, called NetCast Entertainment Access, features partnerships with Yahoo, Netflix and YouTube.

Panasonic, also taking a similar approach, expanded the number of Internet-enabled televisions it offers and added to its online partnerships, which now include Amazon, YouTube, Picasa, and Bloomberg. Panasonic also announced usability enhancements to its interface.

Yahoo, a company that has been searching for a mission in recent years, has found some success marketing its widget platform to television manufacturers - not just Sony and LG, but also Samsung, Vizio and Toshiba. Yahoo's Widget Chan-

nel was developed in partnership with Intel, and is open to application developers. To date, TV widgets have been developed not only by Intel and Yahoo but also by companies such as Associated Press, CBS, CinemaNow, eBay, Joost and MySpace. These widgets provide capabilities such as games, shopping, community, information services and movie downloads.

Besides Yahoo, other companies developing Internet-to-TV software include Sezmi, whose "personal television system" presents a mashup of broadcast and cable channels, Internet video and on-demand content; Macrovision Solutions, which is offering an interactive program guide for Internet-connected televisions; and Move Networks, whose widely used adaptive streaming technology can now deliver high-definition programming to any Internet-connected device. (Move's software is an alternative to Adobe Flash, which is also now being ported to consumer electronics devices.)

Two Japanese companies, Orion Electric and Quixun Co., showed a concept model of a broadband TV powered by Intel architecture. By adding 1 GB of memory and 1 GB of storage to the TV, embedding Windows XP, and using Quixun's ROBRO browser to make all functions accessible through the remote control, the companies developed a combination TV/ PC/DVR. Orion director Hideyuki Yano says, "I believe that this broadband TV will facilitate the real merger of TV and the Internet, and we will be able to provide the real attraction of the Internet to daily lives."

## **CONNECTED DEVICES EVERYWHERE**

Televisions aren't the only CE devices with broadband connections - anything that can produce or display a digital file is now fair game. And with a new international industry forum, the Internet Media Device Alliance, developing standards and device profiles, we can expect rapid growth in this area.

The potential for Internet device connections is limitless. Toshiba's futuristic "concept designs" included NetworkStationery, an Internet notepad, plus a water-resistant viewer, devices powered by fuel cells, and a thin 5mm card-sized device.

Microsoft showed concept designs from a startup company called Fugoo including a clock that displays news, stock prices and weather reports along with the time, and a Web-connected coffee maker that can look up grinding instructions when it encounters a new variety of coffee bean. (Fugoo envisions them eventually talking to each other, so the clock can tell the coffee maker when to start brewing.) Fugoo cofounder John Hui says his platform is set to "redefine the term 'household appliance."

For the moment, however, entertainment devices are the ones most likely to be Internet-enabled. Digital photo frames, one of the highlights of last year's CES, were back in force this year - but they've evolved into much more than picture frames. Digital-frame software from Chumby lets users mix photos and videos from their cameras, computers and the Web; share photos and e-cards with family and friends; and control all of their connected screens from a Web-based account. Chumby (which also manufactures its own WiFi Internet device, the chumby) offers more than 1,000 Internet widgets ranging from news and entertainment to videos, music and sports, as well as



The Vizit photo frame from Isabella Products lets users send pictures to each other over the Internet.

tens of thousands of Internet radio stations, streaming online video clips and more.

Ipevo's Kaleido R7 frame lets users subscribe to content from photo-sharing Web sites like Flickr and Picasa, as well as to news or blogs. The Vizit frame from Isabella Products can receive pictures automatically from a cell phone, e-mail account, computer or Internet photo management sites. Users can send pictures from one Vizit to another Vizit, or even to multiple Vizits - making it easy for far-flung family members to keep up to date with each other.

GiiNii International's PixPlus WiFi-enabled frames are set up to connect with FrameChannel.com or HowStuffWorks. com. And its Movit Mini frame has a webcam and Skype built in, so users can not only view photos and videos but conduct WiFi-based video phone calls as well.

Other devices included:

- Dish Network's award-winning SlingLoaded HD DuoDVR ViP 922 - the first high-definition digital video recorder with placeshifting, allowing users to view their home television from a laptop.
- Networked Blu-ray disc players such as the BD series from LG, which let users download HD movies from the Internet or get ancillary material, such as subtitles or interactive games, related to movies they're watching on disc.
- Internet radios such as Socrimex's WiFi-enabled Scott RXi-400WL, which connects into the home network to receive broadcasts from over 5,000 Internet radio stations and to access over 10,000 podcasts.
- Sony's WiFi-enabled Cyber-shot DSC-G3 digital camera, which uploads photos and videos to Web sites with its builtin browser. After connecting to the Internet via wireless access points, the camera automatically navigates to the Sony Easy Upload Home Page, which includes direct links to popular photo- and video-sharing sites (and also allows access to other sites chosen by the user). The camera can also be used to view images already uploaded.

- Alpha Networks' Internet cameras with bundled software for home security and surveillance systems.
- CyberLink Live 3 from Cyberlink (not a device, but software that runs on Windows Mobile smart phones and other DLNA-compliant devices), which can access a home computer via the Internet and play media stored there. The software was demonstrated along with the Acer Aspire M5700, whose Remote Wake Technology allows it to respond to calls from CyberLink Live even when it is in "sleep" mode - an energy-saving setup.

## LIVE AND IN COLOR...AND THREE DIMENSIONS

3DTV is another one of those promises that have perennially failed to materialize (at least in the consumer marketplace), but this year the times seem to be a-changin'. Several major movie studios have announced their commitment to 3D, the CEA said last summer that it would begin discussing standards for 3D video, and last month a number of 3D products showed up at CES. Like Internet-enabled TV, 3D seems to be a technology that consumers are eager for. In a survey by Quixel Research, over half of the respondents agreed that 3D makes movies and games (especially games) more enjoyable.

In the absence of standards, it's difficult to say what the bandwidth requirements for 3DTV will be - but since the technology essentially involves sending two different versions of each frame, it's likely to be a bandwidth hog, especially when the images are in high definition.

And some of them are definitely in HD. At CES, Panasonic showed its award-winning 3D Full HD Plasma Home Theater System (3D FHD), which lets viewers see 3D images using a Panasonic 103-inch Plasma HDTV and a Panasonic Blu-ray Disc player. A Panasonic executive said the system went "well beyond conventional 3D," due to its ability to refresh at very high speeds. The system is used with active shutter glasses, which let one eye, then the other, view synchronized TV frames in 1/60-second slices, to get a 3D effect.

RealD's stereoscopic Cinema System - complete with eyewear, screen and filtering technology – was demonstrated at CES on a movie screen in a sneak preview of Dreamworks' upcoming Monsters vs. Aliens, and on Sony Bravia televisions as well.

Cinedigm's digital cinema product, using technology from Sensio, was demonstrated in a theatrical broadcast of a football game; the Sensio technology also works with computer and television screens. Sensio allowed CES visitors to film themselves and watch the result live in 3D on a high-definition television.

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## **NEWMARK HOMES USES HOME AUTOMATION TO MARKET CONDOS**

The "connected home" may look exciting on an exhibit floor, but how does it play to real home buyers? It's difficult to tell in a slow market whether a technology amenity – or any other factor – is making homes sell any faster, but initial reports from developers indicate that buyers respond enthusiastically to automation features built into their homes.

The Z-Wave Alliance, whose members create home control products using the Z-Wave wireless communications protocol, says home control capabilities are now being included as standard features in many new homes, particularly in the western states. One developer that has had a positive experience with Z-Wave products is Newmark Homes, whose condominiums in Austin and San Antonio have featured home control for more than a year. So far, the company has sold more than 400 Z-Wave-equipped condos, ranging from low-end to highend units.

Newmark Homes is using a solution from garage door manufacturer Wayne-Dalton. The humble garage door opener now activates an entire "home control scene," turning on garage lights, outdoor security lights and indoor pathway lighting, as well as disarming the alarm system and adjusting the thermostat.

Once indoors, the homeowner uses a 12-scene controller, a little larger than a TV remote control, to control the rest of the house. Activating the "kitchen scene," for example, might turn on the lights in the kitchen, preheat the oven and start the coffee maker. The scenes can also be activated from a PC, using a USB device, or over the Internet. (Not all of the device controls are part of Newmark's standard package, but homeowners can easily add to the system because no hard wiring is required.)

"There are two components, energy efficiency and security," explains Don Cox, Newmark Homes' vice president for sales and marketing. Security features include not only lighting the house and driveway as the owner drives up, but vacation scenes that turn lights on and off at different times of day to create the appearance of someone being in the home. For energy efficiency, homeowners can set lights and appliances to switch off a few minutes after they leave the house; with the new Internet

portal, expected to be introduced soon, they will also be able to control heating and air conditioning remotely.

The home control solution is instrumental in marketing the condos. Each model home has a digital picture frame with a PowerPoint presentation about the solution looping through it. The salespeople have been trained to demonstrate the 12-scene controller, showing pro-

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spective home buyers how the controller can automate the lighting in the home. Placards mounted behind light switches saying "This switch speaks Z-Wave" also stimulate buyers' interest.

The basic package that Newmark Homes builds into the condos adds about \$1,000 to the price, and home buyers often add extras, ranging from \$30 for a switch to \$200 for a controller. Newmark Homes installs the system during the electrical trim-out and then turns it over to a contractor for programming it after the closing.

Feedback from home buyers has been very positive, according to Cox. Salespeople report that buyers - especially in Austin, a city with a large high-tech business sector – are "intrigued and interested" in the home controls. And post-sales feedback relayed from the integrator is also uniformly enthusiastic. "It's equally appealing across all price ranges," Cox says. "The low-end infill condos have security concerns [that this system addresses]; at the high end, everyone wants all the bells and whistles." Not surprisingly, Cox says Newmark Homes plans to continue using and marketing the home control solution in its Austin and San Antonio markets.

Samsung announced that its first 3D monitor, the 2233RZ, which is compatible with Nvidia's new GeForce 3D Vision graphics card, will be available for purchase in April. Samsung recommends the monitor "for uses ranging from teaching and using 3D modeling to playing the latest video games," but gaming seems to be the major market. The monitor, used with Nvidia software, automatically converts more than 350 games to stereoscopic 3D without special game patches.

Also available are active shutter glasses that can be worn over normal prescription glasses.

ViewSonic launched a 3D-ready line, FuHzion, which includes a desktop LCD monitor and a portable lightweight projector. The company says the products are "engineered to be adaptable and affordable" and "will make 3D standard in the home."

The holy grail of 3DTV is autostereoscopy, meaning 3D with no special glasses required. This technology, still much more expensive than 3D with glasses, also turned up at CES. TTE Corporation showed monitors using autostereoscopic technology from French developer Alioscopy, based on a lenticular-lens screen surface. (A lenticular lens refers to an array of lenses arranged so that different images appear magnified when seen from different angles.) Alioscopy, which has been working on the technology for 14 years, says it can be applied to LCD displays and used for media and entertainment, mobile communications, games, laptops, kiosks, digital signage, automotive, architecture, engineering and construction, medical, government and military applications. Digital signage appears to be the primary application at present – but the technology is likely to end up in the mass market eventually.

## SUNNY DAYS FOR CLOUD COMPUTING

In the last few years, as broadband access has become widespread, there has been a huge migration of software and computing capacity from the desktop to larger computers accessed via the Internet - "in the cloud." Cloud computing frees users from software maintenance, upgrading and other chores, and allows them to pay for services based on usage.

Cloud computing also gives users access to powerful software they couldn't run on their own machines. That's the impetus behind technology company AMD's plan, unveiled at CES, to build a massively parallel supercomputer, the "AMD Fusion Render Cloud." AMD will make the Fusion Render

Everything on one bill. Voice Video Data VOD IPTV Conquer convergence with the leader in billing and provisioning. More than 300 satisfied customers. Painless conversion from all major (and minor) billing systems!

Cloud available to content providers like Electronic Arts and Lucasfilm to deliver HD content through the cloud.

AMD anticipates that the new computer, which should be ready in the second half of the year, will be the fastest graphics supercomputer ever. Content providers can use it to deliver video games and other graphics-heavy applications to virtually any Web-enabled mobile device - without sapping the device's batteries or making it struggle to process the content. This will make high-definition entertainment available to smart phones, set-top boxes and ultra-thin notebooks.

The facility will also allow games and movies to become even more graphics-intensive. Gaming companies can serve up virtual world games with unlimited photorealistic detail and also take advantage of new delivery channels. As Robert Rodriguez, director of Troublemaker Studios, described the possibilities: "Imagine watching a movie halfway through on your cell phone while on the bus ride home, then, upon entering your home or apartment, switch over to your HDTV and continue watching the same movie from exactly where you left off, seamlessly, and at full-screen resolution. Imagine playing the most visually intensive first-person shooter game at the highest image quality settings on your cell phone without ever having to download and install the software, or use up valuable storage space or battery life with compute-intensive tasks."

In other cloud computing news:

- · ViewSonic introduced a line of small, lightweight desktop computers intended specifically for cloud computing, in line with its vision of the "transformation of desktop PCs evolving into Web-centric displays that communicate to software applications running on the Internet."
- PlumChoice, a tech support outsourcer, announced remote PC support capabilities that let consumers receive on-screen alerts about critical security, backup and disk health problems, along with instant technician assistance.

## **HOME AUTOMATION SOLUTIONS**

Is home networking and automation about energy cost savings, entertainment, security or convenience? The answer seems to be "all of the above." Here's a great example of each:

Energy savings: CES gave its Best of Innovations award for eco-design and sustainable technology to 4Home's new energy management system, 4Home Energy, which combines 4Home software with devices and technology from Echelon, SMC Networks, and Radio Thermostat Corporation of America. The solution will be in trials this year with smart meter providers and utilities, which will provide back-end support for the system. 4Home Energy has also been licensed by Sensus Metering Systems, a smart metering and AMI/AMR vendor, which will use it to create home-area networking and demand response solutions for its utility customers.

Brad Kayton, COO of 4Home, said the solution was designed "to help consumers understand their current energy consumption and to take proactive steps to lower their monthly utility bill." The system provides a complete, real-time analysis of home energy usage, displaying energy consumption down to a single appliance or light fixture, and recommends options for



saving money and conserving energy. Consumers can monitor and control their energy usage - both at home and remotely via a computer, utility provided in-home display, touch panel, Smartphone, or networked TV. The portal server allows remote management and diagnostics of in-home devices, as well as providing wide-area network load control and load shedding across many thousands of homes.

Entertainment: Crestron won an award for its iServer, a permanent, integrated iPod-based home audio server that turns the iPod into a dedicated whole-house audio server. The Crestron iServer is intended to bridge the gap between expensive audio servers and basic docking stations. Users can access iTunes from a home computer, download songs, and play the music in every room in the house. The iServer synchronizes automatically with the iTunes Library whenever new content is added or new playlists are created. Crestron also announced that December 2008 was the best month in its 40-year history - which doesn't prove anything about entertainment as an anti-recessionary strategy, since the company also makes devices for lighting control, climate control and other types of building automation.

Security: Yet another award-winner was Cernium, for its Archerfish mobile video intelligence solution. Archerfish uses a combination of video cameras, intelligent software and a custom Web portal to 'watch' businesses and homes for events users define as important, such as kids coming home from school or an unwelcome intruder. When a defined event occurs, Archerfish notifies users with text and video to their mobile device, e-mail or custom Web portal.

Unlike most video surveillance systems, Archerfish doesn't require users to watch video all day, nor does it rely on motion alarms to trigger the cameras. It applies industrial-grade video analytics technology (the company makes security software for airports) that lets users define events they want to be informed about and how they want to be informed. Craig Chambers, president and CEO of Cernium, calls Archerfish "the next evolution in place-shifting technology, enabling better lifestyle management, enhanced security and greater peace of mind." The solution includes an Archerfish SmartBox, two cameras, cables, and a custom Archerfish Portal.

Convenience: Taking pity on those of us who can never remember which remote goes with which device, Control4



Archerfish by Cernium Corp. is a mobile video intelligence solution that "watches" a business or home for predefined events.

showed how it can "provide one-touch control of both new and existing electronic systems in the home." Along with 25 partners at its Control4 Partner Pavilion, the company demonstrated how its platform allows interoperability and integration between devices of all kinds - everything from HDTVs to receivers to door locks. Control4 offers both wired and wireless solutions that can be installed in existing and new homes.

## **ABOUT THE AUTHOR**

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## **CES Exhibitor Spotlight** (including partners)

4Home Acer Adobe Alioscopy Alpha Networks AMD Cernium Chumby Cinedigm Control4 Crestron Cyberlink Dish Network GiiNii International Internet Media Device Alliance

**Ipevo** Isabella Products **LG Electronics Macrovision Solutions** Microsoft Move Networks Orion Electric

**Panasonic PlumChoice** Ouixun RealD Samsung Sezmi Socrimex Sonv Toshiba TTE (TCL Multimedia) ViewSonic Vizio Wayne-Dalton Yahoo **Z-Wave Alliance** 

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